Woods Hole Sea Grant
2012 NSGO Review

Michael Liffmann

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WHOISG Management

- Judy McDowell - Director (0.5 FTE)
- Jeffrey Brodeur - Communications (1.0 FTE)
- Diane Murphy - Extension Leader (1.0 FTE)
- Kate Madin - Education (1.0 FTE)
- Admin/financial support through WHOI Biology Department and WHOI Office of Grants and Contracts
- Three additional extension staff members – Greg Berman, Josh Reitsma and Heidi Clark (3.0 FTE) with expertise in coastal processes, fisheries and aquaculture, and water quality
- Small Program

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WHOISG Management

Functional Area	# of individuals	# of FTEs supported by SG	# of FTEs supported by match/leverage
Mgt/Admin	3	0.25	1.00
Comm.	1	0.87	0.13
Ext.	4	2.00	2.00
Education	1	0.33	0.67
Research	33	4.25	1.48

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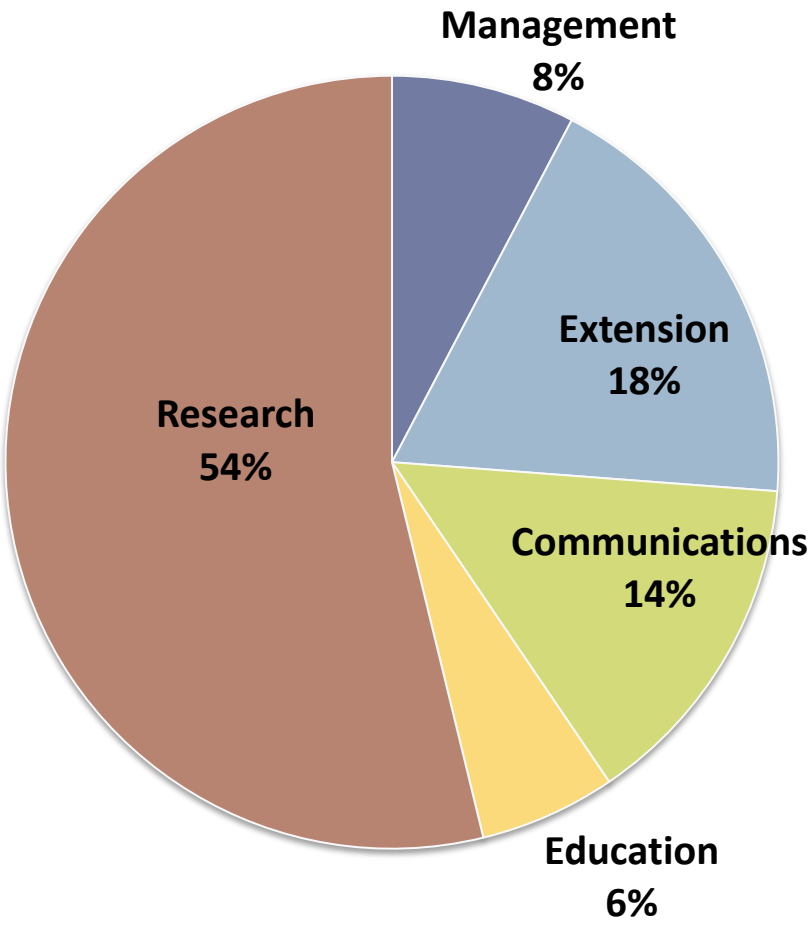
Woods Hole 2010 Core Budget (Fed +Match) Towards each Functional Area



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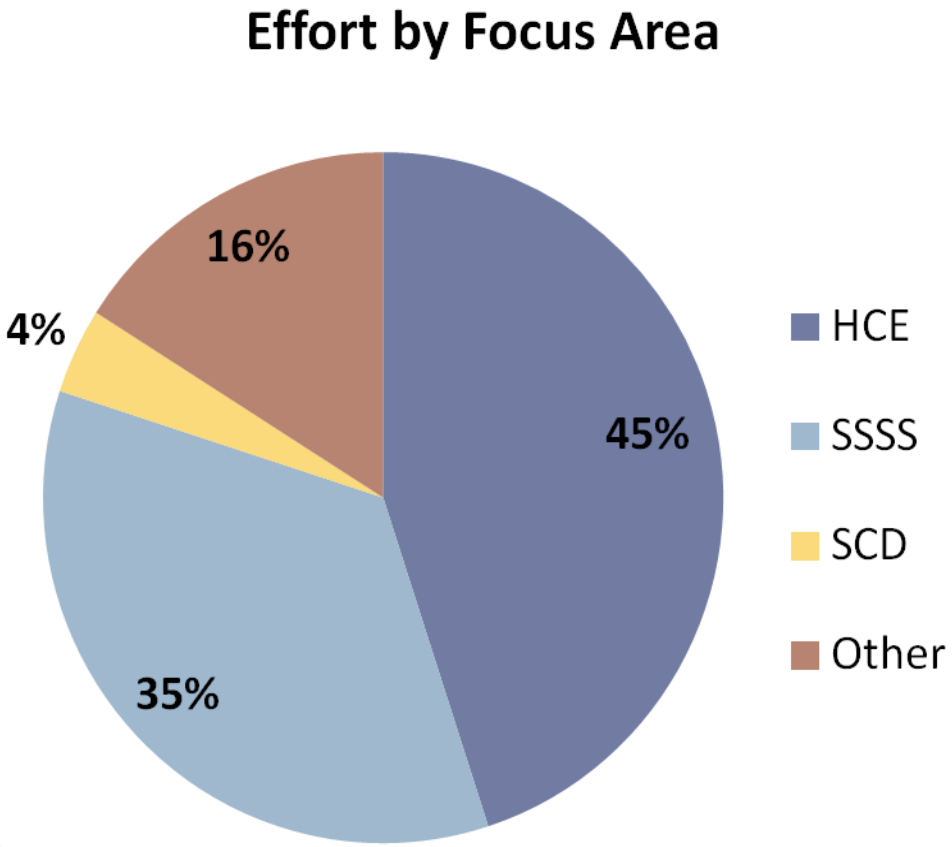
Woods Hole SG 2010 Budget (Fed. +Match+Pass-Through +Managed Leveraged Funds)/Focus Area



Significant Woods Hole SG Changes (since Jan. 2011)

Dr. Heidi Clark – April 2011. SG and CCCE funds. Water quality and environmental risk assessment expertise

Collaborative extension activities with MIT SG: Quarterly meetings of extension staff; joint projects on climate change adaptation and coastal processes; communications and public outreach.

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Woods Hole SG - RFP Process

- January– general announcement and call for pre-proposals (coordination with other NE SG programs);
- February—general information meeting
- (2011) 52 pre-proposals reviewed by panel of technical and extension specialists; Panel also identified potential opps for matching funds, students, outreach, collaboration, etc.
- 23 proposals recommended for full proposals; 22 received
- 3-5 external reviewers per proposal plus WHOI SG staff for completeness, cost-sharing, etc.
- Anonymous mail reviews to PIs for responses. No altering of proposal
- Seven-member Proposal Review Panel recommended 12 for funding plus one regional proposal

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WHOISG 2012-13 RFP Process Projects-Research Metrics

Core Proposals	# of Proposals	# of institutions	# from home institutions
Pre-proposals submitted	52	28	21
Full proposals submitted	22	16	12
Proposals Funded	13	10	8

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Woods Hole SG-Contribution to PMs and Metrics

Focus Area	Metric/Performance Measure	Actual
HCE	The number of tools, technologies, and information services that are used by managers (NOAA and/or its partners and customers) will increase to improve ecosystem based decisions.	6
HCE	Anticipated number of teachers attending WHOI GLOBE (Global Learning and Observations to Benefit the Environment program) workshops.	160
SCD	Coastal communities determine the sustainable carrying capacity of their land, water and other resources. By 2013 all Cape Cod communities will have the capacity to assess their local waters.	24
SSSS	Number of sites for bay scallop restoration so shellfish aquaculture opportunities on Cape Cod and southeastern Massachusetts will continue to expand and support a viable local industry with highly sought after local products.	14

Woods Hole SG Impacts

FOCUS AREA: SSSS and HCE

Goal: A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and efficiently

<u>Fifteen coastal communities within Barnstable County participate in the Municipal Shellfish Propagation Program</u>

- **RELEVANCE: The region, through its municipalities, strives to maintain shellfish resources for both commercial and recreational shellfishing, as well as natural resource enhancement.**
- **RESPONSE: Initiated a county-wide program which includes a regional, competitive bulk hard clam (quahog) and oyster remote set seed purchase designed to help towns avoid costly and late seed arrival problems, as well as ensuring continued shellfish resource enhancement. Woods Hole Sea Grant and Cooperative Extension staff oversee program implementation.**
- **RESULTS: On a yearly basis, since 1999, county and municipal funds have combined to purchase more than 145 million quahog seed and over 19,000 oyster remote set bags. In 2010 alone, combined funds purchased >12million quahog seed and 2,800 oyster remote set bags. If 50% of those quahog seed survived to harvest size, @ $.13/clam the potential total wholesale value would equal $780,000. There are approximately 3.5 million oyster seed in 2,800 remote set bags and if 50% of the 2010 seed oysters survived to harvest, @$.50/oyster the potential wholesale value would equal $875,000.**

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Woods Hole SG Impacts

FOCUS AREA: SSSS and HCE

Goal: A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and efficiently

<u>Established a shellfish farm network with a research approach to improve shellfish culture methods</u>

- **RELEVANCE: The aquaculture industry comprises many disparate farming methods and growers are reluctant to adopt new technologies without proven advantages.**

- **RESPONSE: Modeled after the University of Massachusetts' successful Cranberry Experiment Station, the goal with this project is to address shellfish farming issues relevant to the region. Leveraging funds through SEMAC (SouthEastern MA Aquaculture Center), enabled WHSG staff to work with eleven aquaculturists in 2010, representing twelve coastal regions in ten towns.**

- **RESULTS: On a yearly basis, since 2003, WHSG staff have worked with >50 shellfish growers and in 2010 coordinated a 'seedless' oyster study to compare growth and survival of paired diploid and triploid oysters in the field. Each of the eleven 2010 participants received replicate gear and seed in 2009 and followed standard protocols for the experiment. Results were disseminated and shared with the industry at large, leading to significant increased adoption of triploid seed. Depending on site, many growers reported triploids gave them a distinct market advantage.**

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Woods Hole SG Impacts

FOCUS AREA: HCE and SSSS

- **Goal: A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and efficiently**
  Water quality data acquisition system

- **RELEVANCE: Water quality is of paramount importance to the region, especially as it relates to water bodies which support aquaculture. Developing concerns about changing pH and subsequent ocean acidification, as well as increasing water temperatures make relevant the importance of long-term databases for water quality in order to better monitor trends and/or changes.**

- **RESPONSE: In 2001, with additional SEMAC (SouthEastern MA Aquaculture Center) funding, WHSG and Barnstable County Extension staff purchased YSI multi-parameter sondes to monitor water quality long-term. By 2010, 5 YSI units were purchased and deployed in four towns at locations in close proximity to aquaculture zones, representing >200 shellfish farmers. Additionally, two of the sites provide real-time data relay to website.**

- **RESULTS: In 2010, in addition to the continued data collection at the standard sites, one unit was redeployed closer to an area experiencing unexplained hard clam mortalities for >25 growers. This in-situ placement was critical in documenting site conditions that may/may not have been contributing to the mortalities. Since YSI locations are adjacent to large-scale aquaculture zones, they provide data used to correlate with growing conditions, timing of oyster overwinter removal/deployments, disease events, etc. More than 200 shellfish farmers benefit from this information. Data are also made available to schools, marinas, and general public.**

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Woods Hole SG Impacts

FOCUS AREA: HRCC and HCE

- **Goal: Widespread understanding of the risks associated with living, working, and doing business along the nation's coasts**

<u>Sea Grant Extension continues supporting SE Massachusetts Counties (Barnstable and Dukes) in informing critical management decisions in the coastal zone</u>

- **RELEVANCE: Massachusetts is a "home-rule" state, with local town officials often being the first and last permitting agency for projects within 100' of the coastline. Many of these officials do not have the background to deal with projects impacting coastal processes, may not look past town boundaries, and may overlook cumulative effects.**

- **RESPONSE: In collaboration with Cape Cod Cooperative Extension, WHSG provided technical analyses to local boards and commissions on a variety of projects proposed on or adjacent to coastal landforms before regulatory and planning decisions are made.**

- **RESULTS: Each year dozens of coastal dunes and coastal banks are threatened by projects that could degrade their functions. WHSG's pre-consultation process on 35 projects helped ensure that the natural and beneficial functions of coastal landforms are sustained. Other direct outreach to more than 700 individuals has been made through presentations on coastal processes to different groups.**

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Woods Hole SG Impacts

FOCUS AREA: HRCC

Goal: Widespread understanding of the risks associated with living, working, and doing business along the nation's coasts

Biodegradable Erosion Control

- **RELEVANCE: The latest coastal processes Marine Extension Bulletin, is an overview of biodegradable erosion control methods. It provides the theory behind such methods and describes design components such as fiber rolls, sand envelopes and erosion control mats made from coir, jute and hemp.**

- **RESPONSE: This guidebook has been described as a great resource for helping stakeholders understand biodegradable erosion control projects. Common acceptance among local officials and project engineers.**

- **RESULTS: The bulletin has been distributed to all local officials in Barnstable county. In addition to hardcopy distribution the digital copy has been made available on the WH SG website as well as being distributed by online media and bloggers. All components of an erosion control system are now being more carefully examined as opposed to the previous practice of only looking at the exposed portion of a shoreline project.**

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WHOISG 2010 Research Accomplishments

FOCUS AREA: SSSS, HCE

Toxic *Alexandrium* blooms in the Nauset Marsh system

- **RELEVANCE: The Nauset Marsh System [NMS] on Cape Cod is a unique and valuable resource located in an area with significant and growing development pressures. Shellfishing is a major commercial and recreational activity, but over the past decade the resource has been impacted almost annually by outbreaks of paralytic shellfish poisoning.**

- **RESPONSE: The researchers sought in part to determine the spatial and temporal variability of the *A. fundyense* blooms within the system, map the distribution and abundance of resting cysts within the NMS to determine the potential for local initiation of blooms, and determine the genetic composition of *Alexandrium* populations within the NMS and adjacent coastal waters to asses the extent of inter-population mixing.**

- **RESULTS: The studies revealed that *A. fundyense* populations remain largely localized within the system's terminal endpoints, allowing for shellfish managers to possibly keep the central marsh open even while major blooms are ongoing in the central marsh. This would potentially negate a major economic blow to shellfishermen, dealers and retailers while avoiding undue poor publicity for all Massachusetts shellfish growers that often results from closures even outside their own location.**

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WHOISG 2010 Research Accomplishments

FOCUS AREA: HCE

Zooplankton Accumulation, Fish and Humpback Whale Foraging Response In Stellwagen Bank

- **RELEVANCE: Humpback whales have both a major environmental and economic impact regionally as their presence in Massachusetts coastal waters, including the Stellwagen Bank National Marine Sanctuary (SBNMS), drives an ecotourism industry that impacts towns from Provincetown to Gloucester. Currently there are an estimated 6,000-9,000 humpbacks worldwide, and determining their foraging response in one area could lead to understanding their responses in others across the globe.**

- **RESPONSE: The researchers wanted to establish whether internal sub-surface waves determine the location of humpback aggregation in the SBNMS using satellite radar images, measure internal wave activity at two locations in the sanctuary using moored temperature observations and measure through expert observers whether foraging behavior increases in the presence of those internal waves vs. their absence.**

- **RESULTS: The P.I.s indicated they met "all the major objectives" of their study and generated new hypotheses concerning the distribution of humpback whales in the sanctuary, allowing for better management and oversight by NOAA and SBNMS management. In addition, the observations suggested that fish, especially the sandlance (the preferred prey of humpbacks) also respond to internal waves, which may have an impact on the whales' ability to forage.**

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Sources

- Planning, Implementation, and Evaluation Resources (PIER) https://pier.seagrant.noaa.gov
- Personal Communication with Woods Hole Sea Grant
- 2012-2013 Omnibus Proposal
- Woods Hole Sea Grant Web Site
- 2010 Site Review and Briefing Book

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